IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appl.No.:   10/633,159   Confirmation No.: 5416
Appellant: Oizumi et al
Filed: 08/01/2003
TC/AU: 2624
Examiner: Rosario

Docket: TI-34626
Cust.No.:   23494

APPEAL BRIEF

Commissioner for Patents
P.O.Box 1450
Alexandria VA   22313-1450

Sir:

    The attached sheets contain the Rule 41.37 items of appellant's Appeal

Brief. The Director is hereby authorized to charge the fee for filing a brief in

support of the appeal plus any other necessary fees to the deposit account of

Texas Instruments Incorporated, account No. 20-0668.

Respectfully submitted,

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Rule 41.37(c)(1)(i) Real party of interest

    Texas Instruments Incorporated owns the application.

Rule 41.37(c)(1)(ii) Related appeals and interferences

    There are no related dispositive appeals or interferences.

Rule 41.37(c)(1)(iii) Status of claims

    Pursuant to MPEP 1205.02, for each claim in the case appellant states the status as follows:

    Claim 1: rejected

    Claim 2: rejected

    Claim 3: rejected

    Claim 4: rejected

    Claim 5: rejected

Pursuant to MPEP 1205.02, appellant identifies each claim on appeal as follows

    Claim 1: on appeal

    Claim 2: on appeal

    Claim 3: on appeal

    Claim 4: on appeal

    Claim 5: on appeal

Rule 41.37(c)(1)(iv) Status of amendments

    An amendment after final rejection to correct a typographical error in claim 4 was filed 09/06/2007.

Rule 41.37(c)(1)(v) Summary of claimed subject matter

    The independent claims on appeal consists of method claim 1.

    The subject matter of claim 1 is a method of image filtering, comprising the steps of:

 (a) computing edge intensity and direction for each pixel in an image (application page 4, lines 4-5; FIG.1, top box);

(b) filtering said image with a filter which, for each pixel, smoothes in a direction parallel to the edge found in step (a) for said each pixel (application page 7, lines 1-4; FIG.1, second and third boxes);

(c) interpolating said image and said filtered image from step (b) wherein said interpolating at said each pixel depends upon said intensity found in step (a) (application page 7, lines 5-10; FIG.1, fourth box).

Rule 41.37(c)(1)(vi) Grounds of rejection to be reviewed on appeal

The grounds of rejection to be reviewed on appeal are:

1. Claims 1-5 were rejected under USC §112, ¶1 as failing to comply with the written description requirement.

2. Claims 1-2 and 4 were rejected under USC §102(b) as anticipated by Tai (USP 5,054,100).

3. Claims 1 and 5 were rejected under USC §102(e) as anticipated by Tults (USP 6,339,451).

4. Claims 1 and 3 were rejected under USC §102(e) as anticipated by Adams (USP 7,023,487).

Rule 41.37(c)(1)(vii) Arguments

1. Claims 1-5 were rejected as failing to comply with the written description requirement; the Examiner cited a lack of support for "interpolating" in step (c) of claim 1.

Claims 1-5: Application page 7, line 7 recites the equation

$$p^{new}(n,m) = \quad I(n,m)\, q(n,m) + [1 \quad I(n,m)]\, p(n,m)$$

which is the claimed interpolating: $p(n,m)$ is an unfiltered pixel, $q(n,m)$ the corresponding filtered pixel, and $I(n,m)$ and $1 \quad I(n,m)$ are the interpolation weights which depend upon the intensity $I(n,m)$. Note that this is linear interpolation which is a weighted sum. Consequently, the application supports claim 1.

2. Claims 1-2 and 4 were rejected as anticipated by Tai; the Examiner cited Tai figs.5,7 and ignored step (c) of claim 1 due to the §112 rejection.

<u>Claims 1-2 and 4</u>: Tai does not suggest the interpolating of step (c) of base claim 1; rather, Tai relates to filtering for digital image resizing. Consequently, the claims are patentable over Tai.

3. Claims 1 and 5 were rejected as anticipated by Tults; the Examiner cited Tults figs.3,6,7 and ignored step (c) of claim 1 due to the §112 rejection.

<u>Claims 1 and 5</u>: Tults does not suggest the interpolating of step (c) of base claim 1; rather, Tults relates to on-screen display of lower resolution graphics in digital TV and rounds diagonal edges. Consequently, the claims are patentable over Tults.

4. Claims 1 and 3 were rejected as anticipated by Adams; the Examiner cited Adams figs.2,3 and ignored step (c) of claim 1 due to the §112 rejection.

<u>Claims 1 and 3</u>: Adams does not suggest the interpolating of step (c) of base claim 1; rather, Adams relates to video interlaced-to-progressive conversion with edge detection to determine field interpolation direction. Consequently, the claims are patentable over Adams.

Rule 41.37(c)(1)(viii) Claims appendix

Claim 1   A method of image filtering, comprising:

  (a) computing edge intensity and direction for each pixel in an image;

  (b) filtering said image with a filter which, for each pixel, smoothes in a direction parallel to the edge found in step (a) for said each pixel;

  (c) interpolating said image and said filtered image from step (b) wherein said interpolating at said each pixel depends upon said intensity found in step (a).

Claim 2   The method of claim 1, wherein:

  (a) said computing of step (a) of claim 1 includes

(i) computing variations in pixel values for horizontal, vertical, and diagonals at said each pixel; and

(ii) computing edge direction and intensity from said variations of (i).

Claim 3   The method of claim 1, wherein:

  (a) said filter of step (b) of claim 1 for said each pixel is a rotation according to said edge direction of step (a) of claim 1 of a fixed filter.

Claim 4   The method of claim 1, wherein:

  (a) said filter of step (b) of claim 1 for said each pixel is a matrix which depends upon $r = d_x/d_y$ with d_x is a measure of variation in the x-direction at said each pixel and d_y is a measure of variation in the x-direction at said each pixel.

Claim 5   The method of claim 1, wherein:

(a) said image is a color channel of a color image.

Rule 41.37(c)(1)(ix) Evidence appendix

<u>Rule 41.37(c)(1)(x) Related proceedings appendix</u>